

# Product IVE

## Final Report

### Team Members

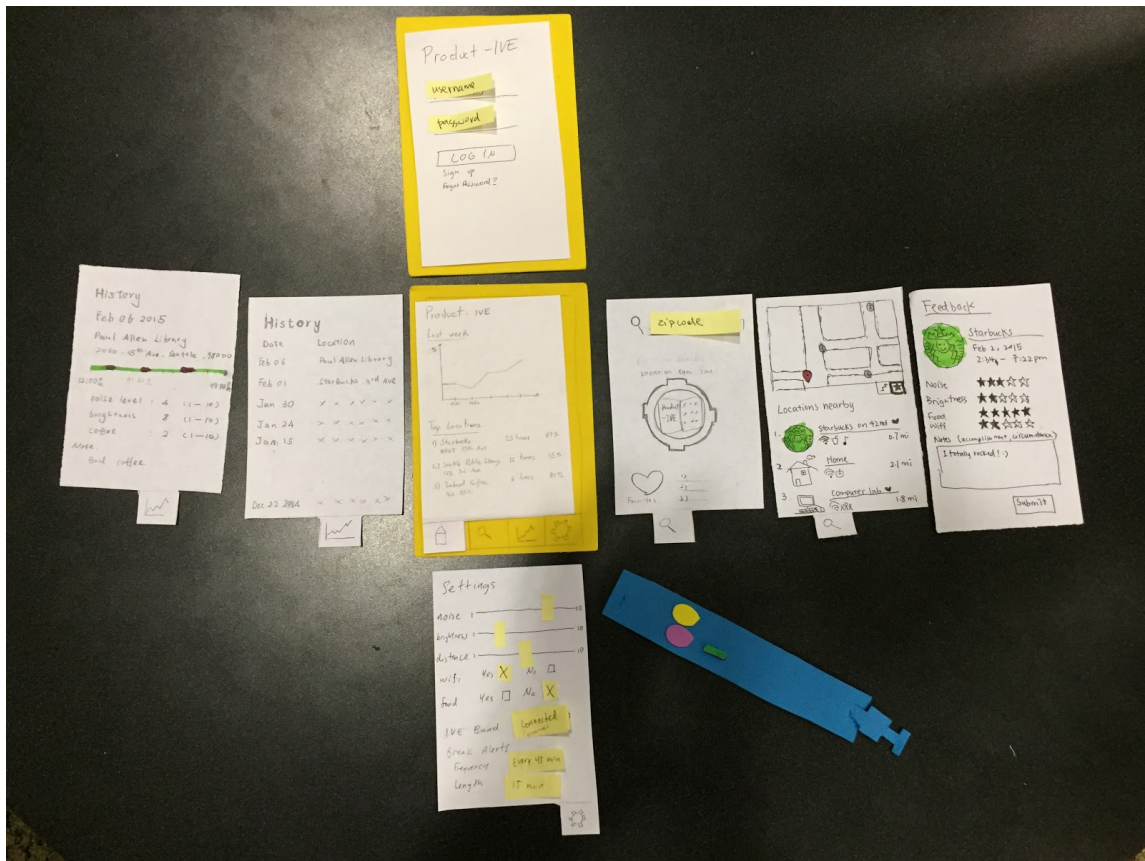
- **Jian Zhao:** Paper prototype, writing
- **Marco Vertucci:** Paper prototype, digital prototype
- **Nicole Atherly:** Paper prototype, writing
- **Chenmin Liu:** Paper prototype, writing

### Problem and Solution Overview

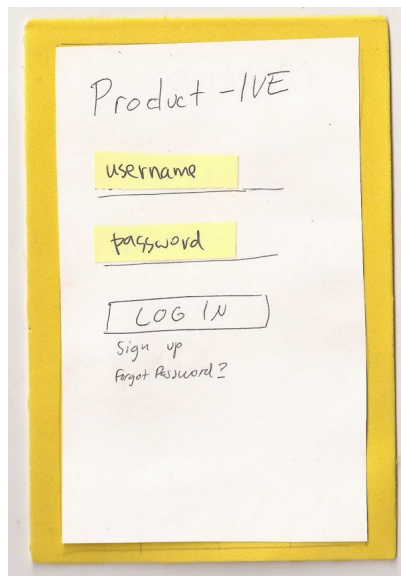
Most people often feel that they are not achieving all they can with the time they have, realizing that there are certain factors that routinely distract them and cause this state of unproductiveness. Some people easily get annoyed by the noise, some by the presence of other people, others by social media. At the end of the day, it can happen that you look back and you find that you have done nothing productive. There is no doubt that all those little distractions are actually causing you to lose a great chunk of time. Many people have realized the issues and tried to find a place with less distractions, so that they can be concentrate harder and work smarter.

In order to help people find a working place (other than school or offices, since these places are not always open or available) we developed Product-IVE, a product which will help people search for a location with the right environment and monitor their productivity with an app and wearable, helping them stay productive whenever they need to work. Our solution works towards helping people to find the best environment which fits any working style.

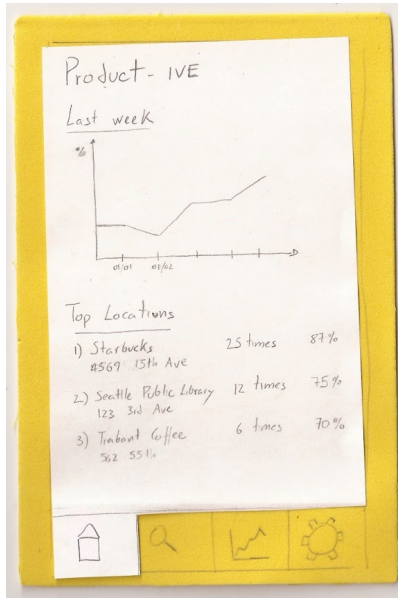
## Initial Paper Prototype



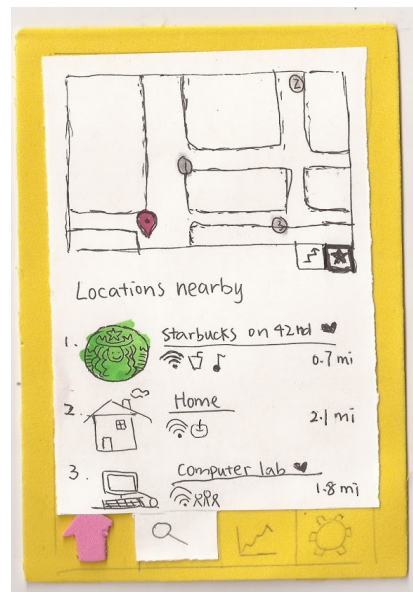
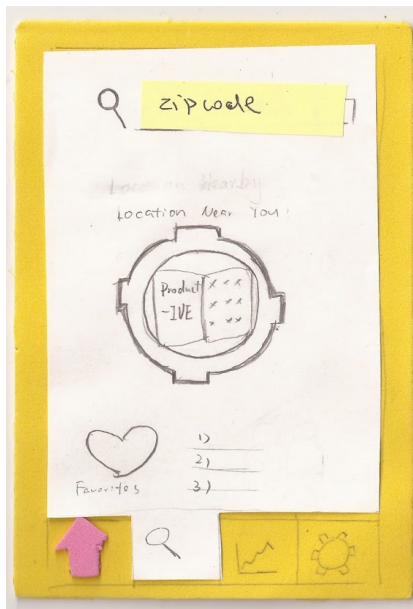
Our paper prototype includes both the wearable and the mobile app that support our two main tasks: work environment tracking and suggesting. We maintain a four-tab navigation layout, and include screens that go into detail about our tasks of searching for a location, viewing work history, and being able to adjust the settings and preferences. The wearable keeps track of various factors of the users' work environment.



User logs into our password-protected mobile app to find a perfect work environment that suits his/her work habits, and to view the detailed analysis of all previous work sessions. If the user had logged in before, the app will go directly to the home page.

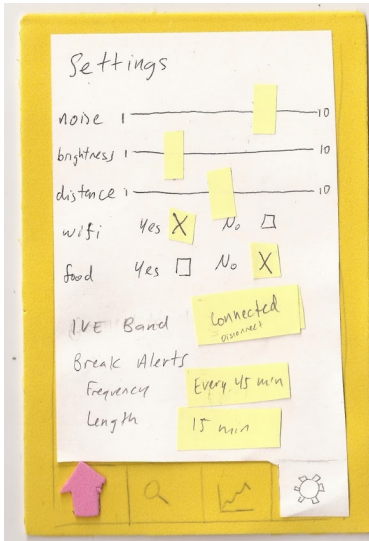


The home page visualizes various statistics related to the last work session, and locations that he/she had the most productive work experience in. Every number matters. We believe that our data-driven design helps user understand his/her productivity.

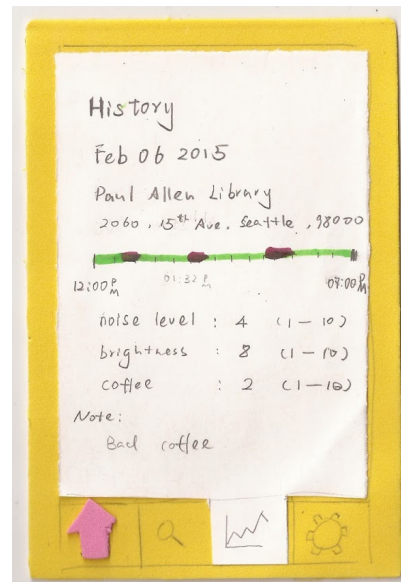
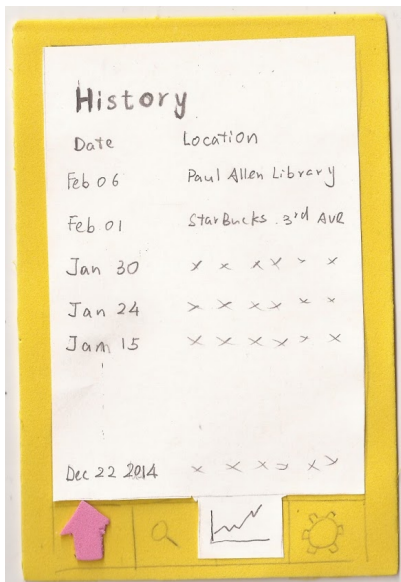


If the user is looking for a new location to work, he/she can search based on their settings and current location. They can search for places nearby, or specify a zip code if they are going to be in that area later and want to plan in advance. If they are feeling less adventurous, they can just select from their favourites.

The Search Results page shows a map of the locations that meet the user's requirements, and also what is offered at the suggested locations, using icons. In this case the results are filtered by distance, but you would be able to filter by relevance as well.

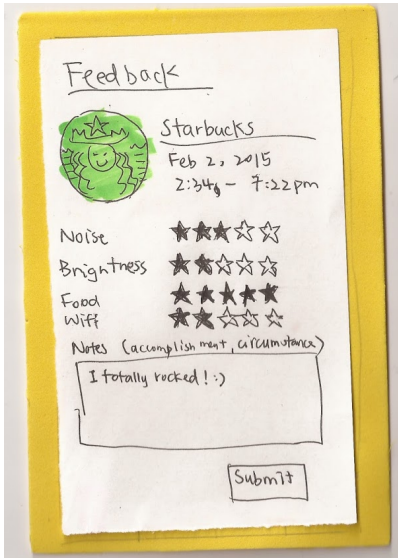


The settings page is where the users set their preferences, which will determine what locations will be suggested. This page allows them to override the default settings, for example by always searching for places less than 1 mile away, or only search for locations with Wifi. It also allows them to connect to their IVE band, and schedule how frequent and for how long they want to take breaks.

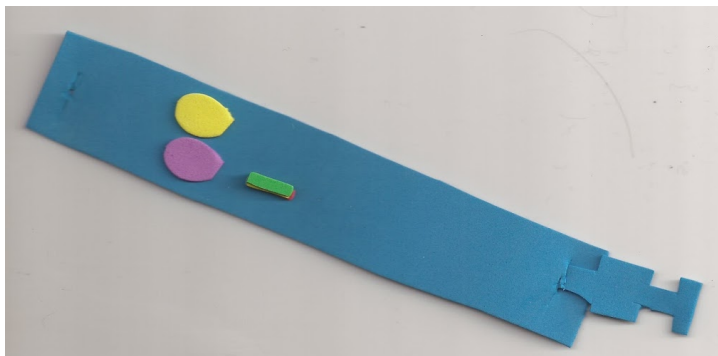


In the History page the user can see a table view list of where he/she has recently worked and when. If the user clicks on the location they will go to a more detailed view of that location, shown on the right.

The work session history detail page contains more information about a particular session. There is a time chart of productivity and break intervals, information on noise and other factors, and any notes the user added at the end of the session.



The next time the user launches the Product-IVE application after completing a working session, the feedback page will appear. This allows users to rate various factors of their work location and write notes about their work experience.



The IVE Band has two buttons and a LED light. One button starts and stops a work session and the other starts and stops a break. The LED is green while a session is in progress, yellow during a break, and red when disconnected from the mobile app.

## Testing Process

For our usability testing, we decided to focus on people that would best fit our target audience. In order to do this we didn't pick a specific place, but rather chose different locations in order to get a more diverse group of people. We wanted to find people who are tech savvy and have been out of the student environment for at least some time, and who sometimes work in public places and want to improve that experience.

We interviewed Alex for our first usability test. He is a 23 year old web consultant who had just graduated from UW the year prior. We chose this participant because he is part of our target audience, and since his job allows him to work remotely that made him our ideal candidate to test out our application. From this usability test, we learned that it's best to give the user a specific task. In order to get the best results, we went through UI twice. The first iteration was a passive observation, in which we took notes. The second time we opted for a think aloud in which the user could explain why he made the choices he made. By listening to his thought process we were able to get some really useful insights on what confused him and what he thought was well designed and intuitive.

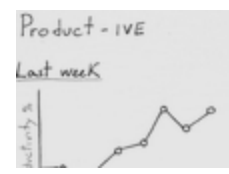



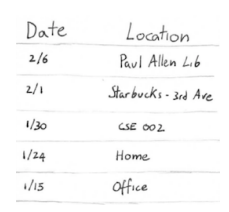
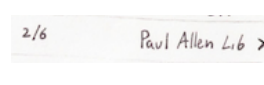


Our second participant was John, a 32 year old Grad Student at the University of Washington. We met him in Red Square where he was sitting and taking a break from his work. As a Grad Student at UW, his working locations alternated between his office on campus, home, and the cafes on the Ave which made him appropriate for our testing . Moreover, he admitted to frequently using other types of productivity apps so he was able to give us good feedback on our design based on his knowledge of like products. By the time we conducted our second usability test, we had already revised our prototype to fix some of the glaring issues that came up in the first test, in the hopes of getting more specific feedback. We also changed our process, and focused more on the think aloud than the passive observation protocol. From our first usability test, we especially learned not to give leading key words when describing tasks. In this way we were able to see how he would interact with the app and the wearable in a hypothetical real-time situation.

Maintaining the same paper prototype and process used in the previous usability test, we chose to use the think aloud protocol for the last test. We found our third participant in the Starbucks in front of Westlake Center in downtown Seattle. He is a 25-year-old non-native English speaker who moved to America a few years ago. This time we picked a place other than a typical location where people would normally choose to work, because we want our product to be tested by people with various backgrounds. We chose a student because they still comprise an important part of our target audience, and also in order to add diversity and completeness to our usability tests.

## Testing Results

The paper prototype testing revealed many positive factors, and it brought up some valuable critiques as well. All participants showed great interest to the Product-IVE, and would like to see such product available in the market. However, there were a few functions had been ignored by the participants, and also some participants were confused with some settings. After each testing cycle, we collected the critiques and updated our prototype accordingly. After the original paper prototype testings, we modified the location search button from a image to a bar which is more familiar to users; after the second testing, we focused on making the functionalities more intuitive, so that the users could finish the tasks with little confusions. With the feedback, we created our digital mock up with some more changes which we believed would make Product-IVE more user friendly.

Image	Issue	Severity (1-4)	Change	Fixed image
	Drop-down list for sorting the search results isn't noticeable	3	Move the drop-down list next to the underlined text 'Location'	
	The distance to a location suggested isn't shown	3	Add the distance to a location	
	Unclear that it is for an ideal work environment	4	Add a section 'ideal work environment'	
	Yes/no button can be more concise/clear.	2	Change yes/no button to checkbox. Add 'power outlet'	
	The next step is unclear after setting up	4	Add a "save" button	

	Unclear that it is the home/main page	4	Replace our product name with 'Home page'	
	History page icon too similar to home page graph	3	Change to list icon	
	List items don't suggest clickability	3	add small arrow to the right	
	People don't know what decibel mean or what they correspond	2	add speaker icons instead	

Here, we would like to present two important revisions:

### Setting page

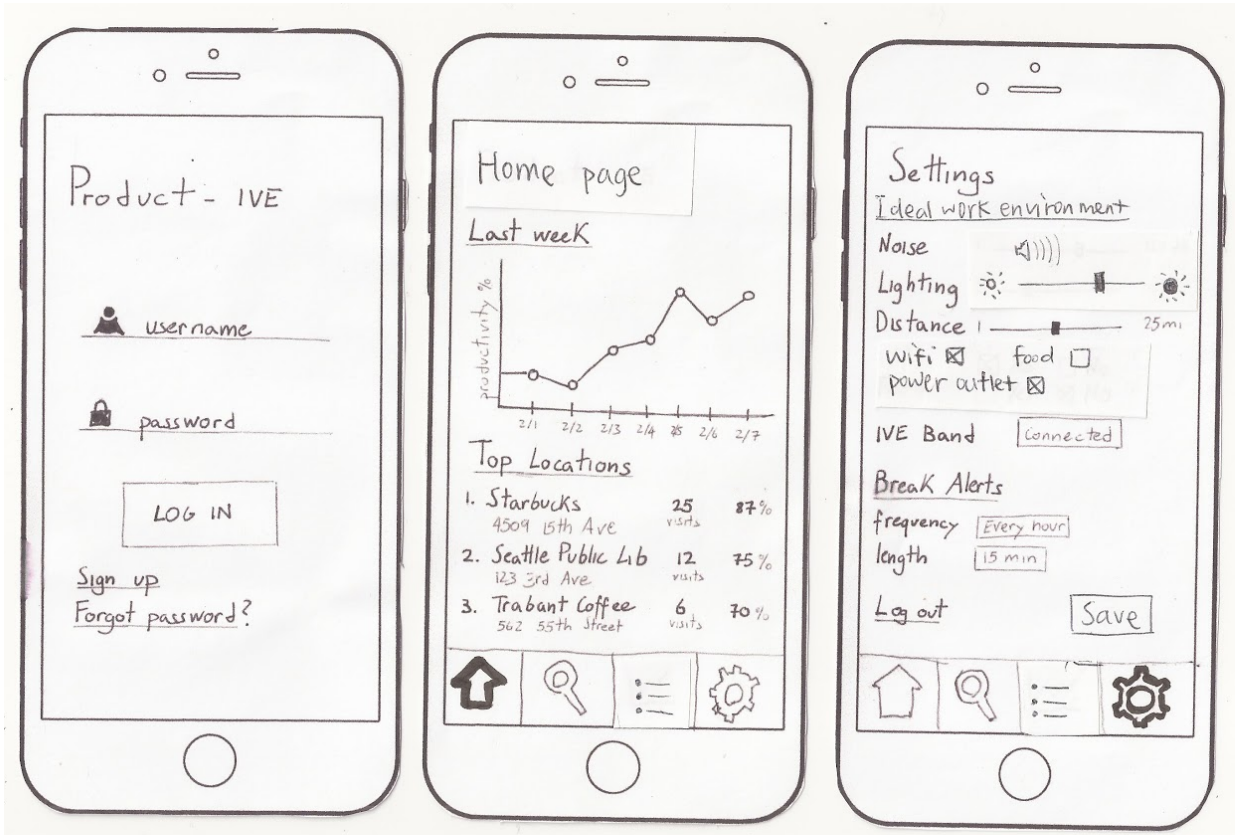
Initially, it was not clear that our search for work environment was based on the settings. Placing the setting among all other tabs misled users into assuming that the tabs had equal importance and could be clicked on equally frequently. All our participants went directly to the search page no idea that personalizing search results was one of the app's main features. We decided to prompt the first-time users to set the preferences. Once they have set the preferences, by default, they will go search for locations directly, unless they want to change some of the preferences. To see how this revised design would perform, we conducted a few more usability testings. Our participants were confused on why they landed on a setting page upon login and would this happen on every login, since they might not be familiar with the search feature. Based on the confusion, we decided to add a section title 'Ideal work environment' to explicitly state the purpose.

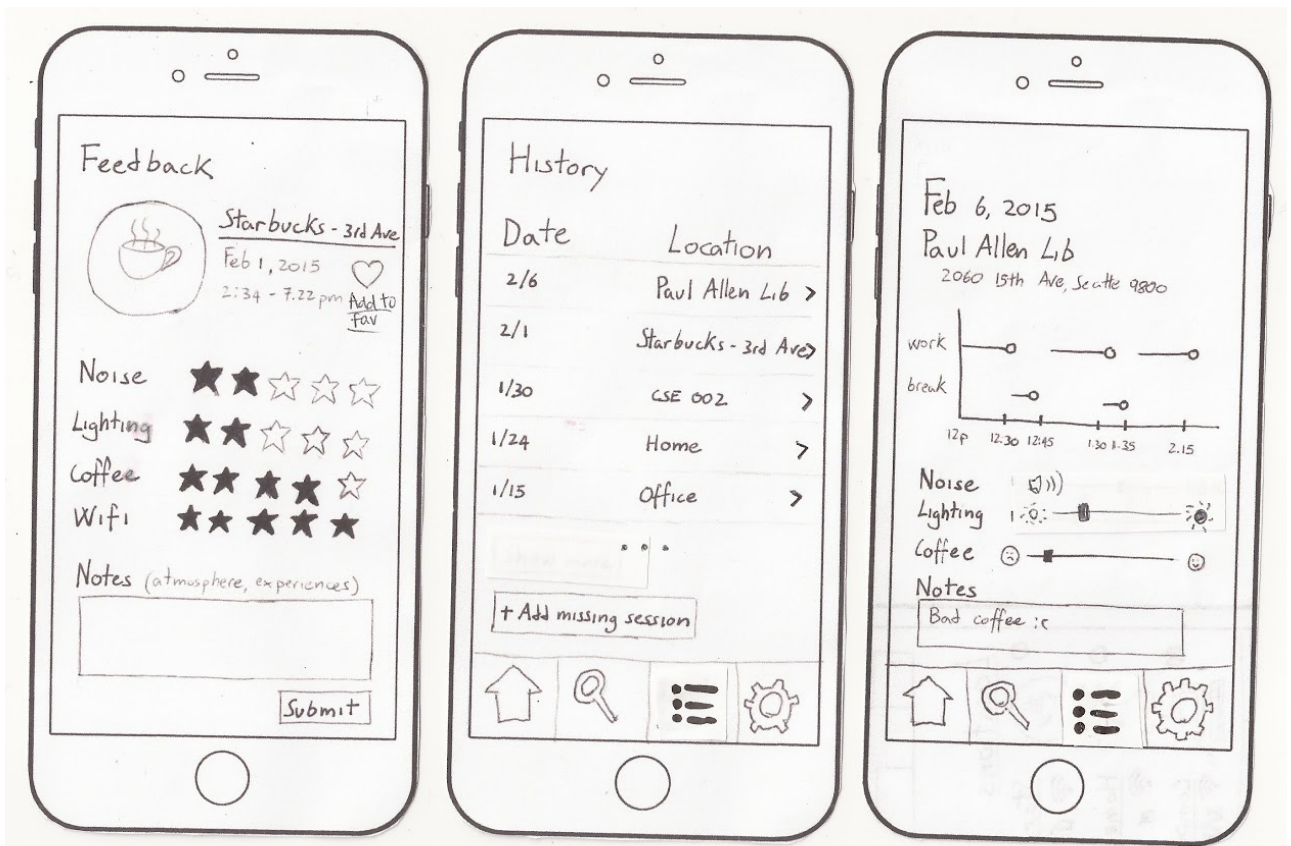
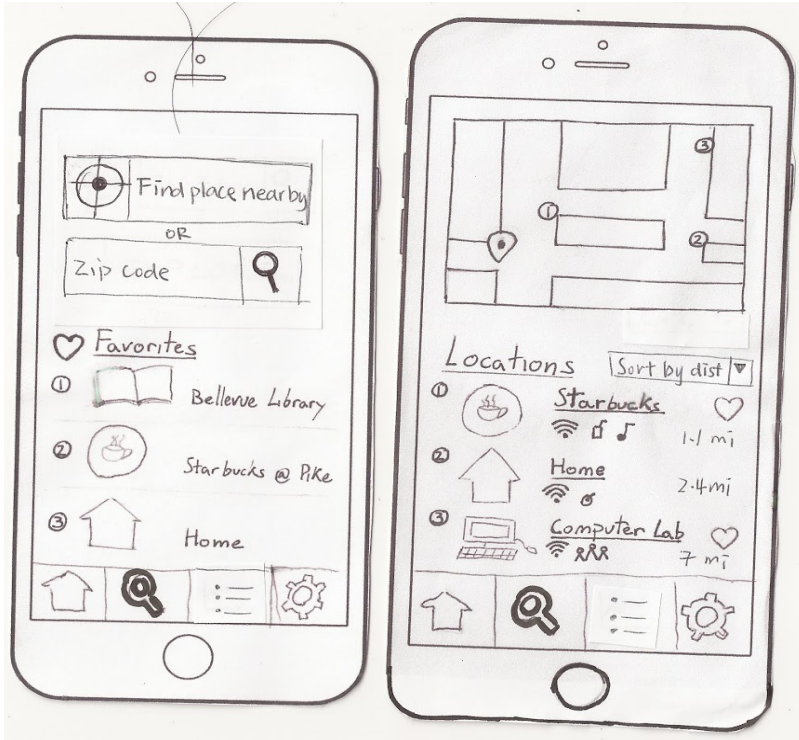
### Search page

Our participants were confused about which button to press to start the search. For example, participants put a zip code, but pressed the button for searching locations nearby. This would result in the locations found not matching users' expectations. Therefore, as it is one of our main functionalities of our application, we decided it was crucial to make it more clear. We can't risk losing customers due to them not understanding how to search for a place to work. We decided to default the search to locations nearby unless users put a zip code or city. We also fleshed out the favorites section on the same page in a better and more clear way. This will allow people to go directly to one of their favorite spots around.



# Final Paper Prototype



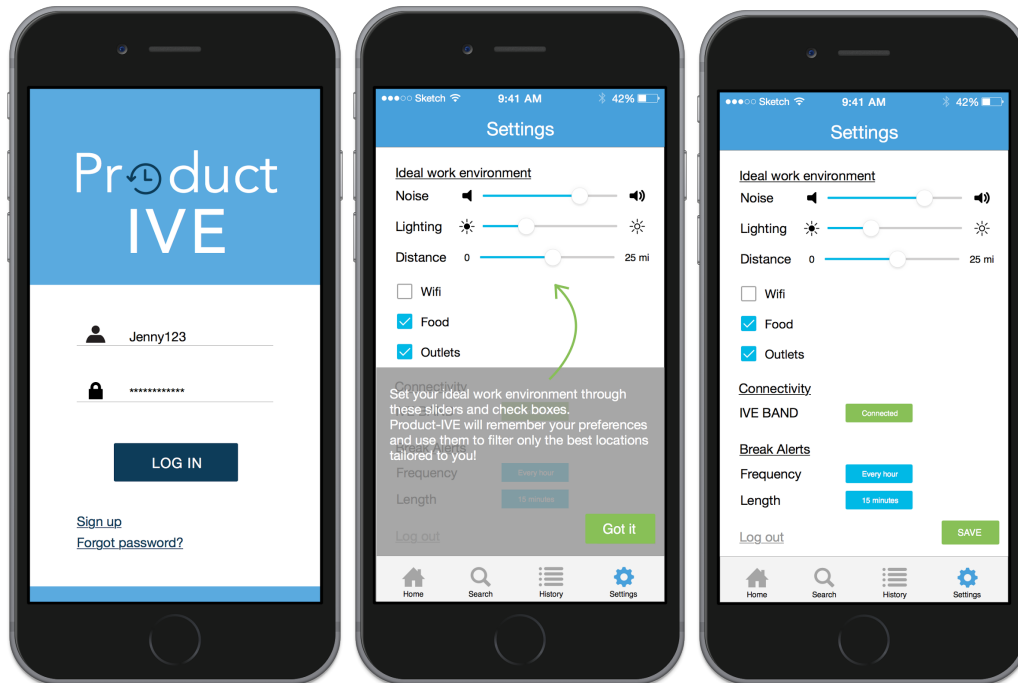


Our final paper prototype includes many improvements over our original design as a result of our usability tests and design feedback in class. We made many changes to the setting and search pages in response to this feedback. The setting page was made to be less confusing to users, and it is presented to them after they sign up to ensure that user's set their preferences before attempting our other functions.

Our two main tasks are finding a location to work at and keeping track of important factors of a work session. We worked hard on our search page to accommodate our location searching task. Our first prototype had a somewhat unconventional, confusing layout for search. It involved a large search button that wasn't clear to users that it was a button. We have since moved towards a more common design of a search box with a search button and an option of searching nearby. We allow users to sort the found locations by proximity and relevance, so users will be able to find the best locations for them easily.

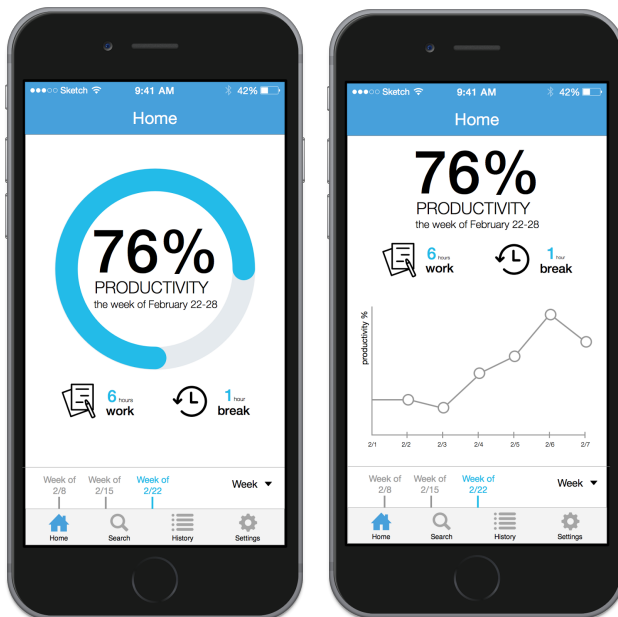
Our second task is implemented through the IVE Band and the History pages. The IVE Band is simple enough for users to understand, so we did not need to make modifications to our design and used the version from our first prototype. The history pages required improvements, however. One of the main issues we had was having a confusing history icon in the app bar. We tried three different icons before deciding on a list icon. We also added bolding to the icon that the user is currently on so that it is less confusing. The history page itself was made to appear less like a static list, and we added arrows so the user could tell each item was clickable. We also changed the graph on the history detail page to better represent the work and break times during a work session.

## Digital Mockup

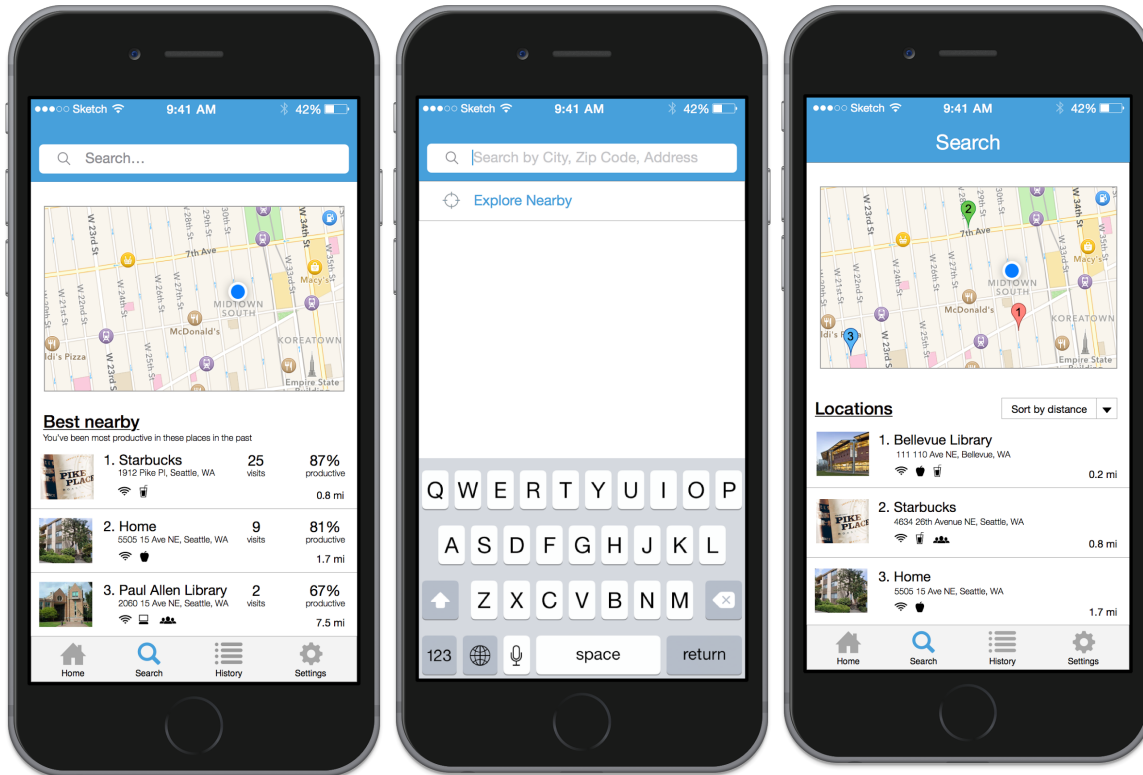


**Login** - Users login to our password-protected mobile app Product-IVE to start boosting their productivity at work/study by finding the best work environment for them specifically and by tracking their work sessions.

**Settings** - At their first time use of the app, the users guided through setting their ideal working environment by specifying the extent they care about various factors in a work environment. Such factors include noise level, lighting, availabilities of WiFi and food, etc. The settings will allow the app to tailor the search results to each individual users, based on their work habits.

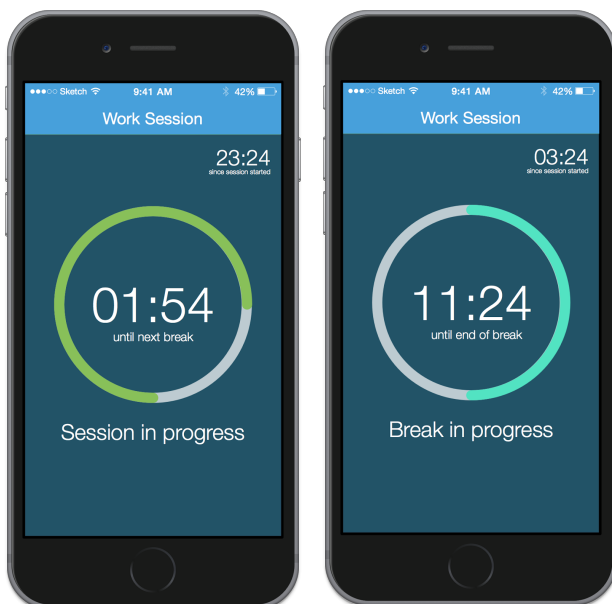


**Home** - If it is not the first time they use the app, the user will be directed to the Home page. Here, they can get information about their productivity level at a glance, and details about the session/s. Swiping up will display more information about the currently selected session/s. The sessions can be selected by day/week/month through a time bar at the bottom of the page, just above the navbar.

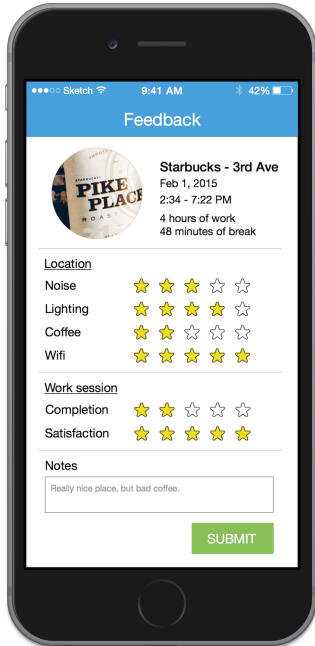


**Search** - Users can search for locations that match their preferences nearby them or in another area. They can also pick from a selection of nearby places where they have been most often and have been most productive. Clicking on the search bar will allow you to search either by Zip Code, City, Address or simply explore nearby locations.

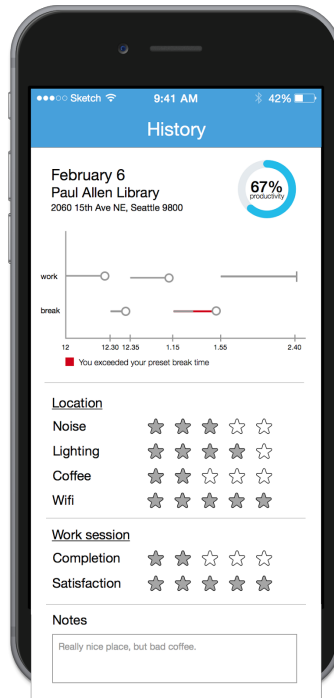
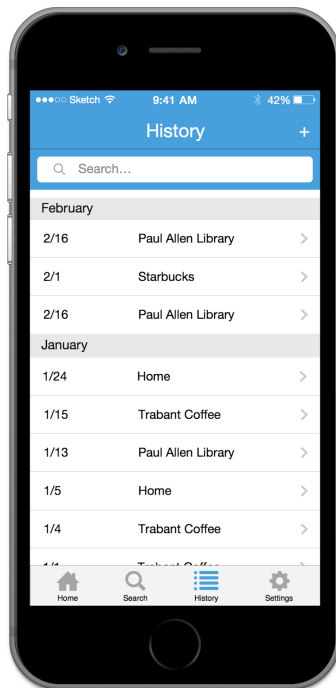
**Search results** - Location suggestions near their preferred area are displayed either based on proximity or on which ones best match the user's preference. Icons for how well matched the location is with the user's settings are displayed for each place, and tapping on a location brings up the phone's GPS/mapping system.



**Work session**- When the user starts a work session with the IVE band, the app will start recording the session as well and set a timer until the next designated break. The break session page works in a similar way, counting down until the end of the next break.



**Feedback** - After a work session, the user can submit feedback on where they worked and the quality of their session. The feedback is based on how they liked different aspects of the location and also includes personal notes that the user can reference in the future.



**History** - Users can scroll or search through a list of previous work session, ordered chronologically. They can also see the detailed analysis of each work session, and the notes they made about their experience.

**Detailed history** - Individual work sessions have their own pages which users can view. The page includes detailed information on the productivity of the session and any feedback the user submitted. We chose to display this page as scrollable because it need to convey a large amount of information.

In the digital mockup, we improved the buttons on the “Search” page. In order to reduce the confusion, we had two search buttons in the final paper prototype -- search by zip code or city name, and search nearby location. While we were creating the digital mockup, we found that with the color and shade we can display the image better in the digital mock up than we could draw for the paper prototype. Therefore in our current digital mock up, we decided to use one search bar to deliver both search functions. We also adding different colors to the buttons with different functionalities. Another significant improvement was in the home page, where we chose simplicity and data as opposed to lots of information and text. During our usability tests, nobody really commented on the page, neither in a bad nor good way, so we thought we wanted to make it more appealing and interesting by cutting most of the text and focusing more on numbers and graphs and having a clean and modern feel. We still felt that the top locations were significant but also redundant with the favorites so we decided to move the top locations to the search page and eliminate favorites.

### **Task 1: Find a desired work environment nearby**

In order to find a desired work environment, the first thing to do from the home-page is go to Search. Here you will have the chance to select one of the nearby locations you were previously productive at, or search. If you decide to search, you will be able to type a Zip, City, or address, or explore nearby places. In both cases you will arrive at a map page with several locations listed according to distance and compatibility to your preferences. Just a tap on either the pin on the map or the list element and you will be directed to the location through your phone GPS.

### **Task 2: Track productivity and environment of a work session**

As soon as you get to the desired location, you can start tracking your work session by pressing the start button on your IVE band. This will also set a timer on your phone so you can check your progress and when your next designated break will start or end. The IVE band will also vibrate every time you should take a break, which is based on your preferences. In order to start and end a break, just press the break button on the band. After a work session, the app will prompt you to give some feedback and then calculate your productivity and the level of various factors in the work environment.

## Discussion

### What did you learn from the process of iterative design?

Throughout the entire design process, we have learned not to come up with a flawless design in the first place, but to expose all the potential problems to our usability testing participants and have them point out the problems. We also tried not to limit our participants to just think about the problems we found in the app. Instead of guiding them to use the app step by step, which can interrupt their thought process, we encouraged them to think loud and lead the conversation. In the mean time, we kept track of which parts of our design and functionality confused them, and checked in with them at the end of the testing.

### How did the process shape your final design?

The usability testing shaped our designs by encouraging us to take into consideration our potential users' requirements and their constructive feedback. We learned to make our icons and graphs simple and self-explanatory to make sure that our users know how to navigate between the pages. Sometimes standardization between applications is best for the user we looked at many different applications to work on our Search page and this allowed us get a design we believe our users are familiar with.

### How have your tasks changed as a result of your usability tests?

In our usability testing, we learned that a zip code might specify an area that was not within walk distance, or users might not know the zip code when traveling to a new area/city. We decided to change our location search so that it defaults to places nearby, but also allows users to specify a zip code or city if they are planning some work sessions ahead.

In terms of calculating the percentage of productivity, we changed it to take into consideration how often and how long users take breaks. Since being productive does not simply mean working long hours, users should be encouraged to take short breaks occasionally to refresh their minds. Our productivity percentage will be measured by comparing hours of work versus hours of break, but focusing mostly on the 'bad' or 'red' breaks we implemented, which is the extra time you take before stopping a break after the band alerts you that your designated break is over (so if you set a 15 minute break and then take a 20 minute break instead, the 'red' break will be 5 minutes). We will also factor into the percentage the ratings people give their work session on the feedback page once the session has ended. However, we will most likely not disclose this information just like other apps don't disclose their algorithms.

### Do you think you could have used more, or fewer, iterations upon your design?






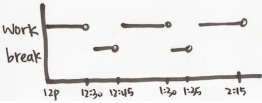


We wish we have done more usability testings of our final paper prototype outside the the quiz section before transforming it to the digital mockup. Also, since we spent much more time on the paper prototype than on the digital mockup, we wish we had a bit more time to refine the latter, especially because we ended up significantly reworking some aspects of our design when translating it from paper to digital.

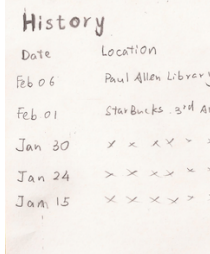
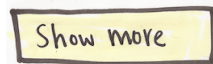


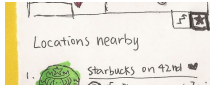
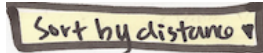
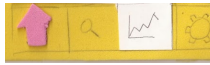

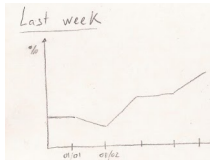
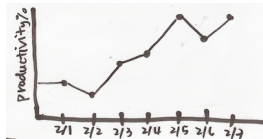



# Appendix

## Usability testing on the initial paper prototype

### Heuristic Evaluations

Image	Issue	Severity (1-4)	Change	Fixed image
	<p>Search button is unclear and doesn't seem clickable</p> <p>Heuristic: Aesthetic and minimalist design</p>	3	Change the button to something more familiar to the user that suggests pressing affordance	
	<p>User can only use the wristband to mark the start/end of a session. No way to manually log the data if they forget to use the wristband</p> <p>Heuristic: Prevent errors</p>	3	In the history page, add a button 'manually log my sessions'	
	<p>Graph on history detail page is not clear on what it is measuring. User thought it was the hours the work location is open.</p> <p>Heuristic: Aesthetic and minimalist design</p>	2	Better labeling, change graph type to something more visually obvious	
	<p>The app doesn't remind user to set preferences for work environment before a search</p> <p>Heuristic: Precise and constructive error messages</p>	2	In the search page, remind user to set preferences if he/she hasn't done so, and show the preferences in case the user forget	

	<p>No button on the history page that takes user to a more detailed history, which ended up being ignored</p> <p>Heuristic: Help and documentation</p>	<p>2</p>	<p>Add a button 'show me more'</p>	
	<p>Distance preference setting is from 1-10 but user doesn't know what the scale means</p> <p>Heuristic: Match between system and the real world</p>	<p>2</p>	<p>Change numbers to 1 mile - 25+ miles or something like "closer" to "farther"</p>	
	<p>Search result sort icons unclear</p> <p>Heuristic: Match between system and the real world</p>	<p>2</p>	<p>Change to "sort by:" drop down with "preferences" and "distance" as options</p>	
	<p>History icon in bottom bar is not identifiable</p> <p>Heuristic: Aesthetic and minimalist design</p>	<p>1</p>	<p>Change history icon to a calendar icon</p>	
	<p>Overview page graph axes are not labeled well. User doesn't know what the graph is showing.</p> <p>Heuristic: Aesthetic and minimalist design</p>	<p>1</p>	<p>Change label to Productivity (%)</p>	
	<p>Rating of a work environment is on a scale from 1 to 10, but that of user feedback users star rating</p> <p>Heuristic: Consistency and standards</p>	<p>0</p>	<p>Not modified, since star rating is more standard for user feedback</p>	

## Usability Test Results

For our first usability test, we interviewed Alex, a 23 year old web consultant who had just graduated from UW the year prior. We met him at Marco's workplace because he had the paper prototype and it happened to be a convenient location for Alex. We chose this participant because he is part of our target audience. He is in our ideal age range and since his job allows him to work remotely that made him our ideal candidate to test out our application. Since we didn't have a lot of time to prepare, in this case Chelsea was the computer, and Marco was the facilitator and observer. We were then able to share the content with the rest of our team.

We learned to give the user specific tasks, and how to refrain from interacting with the user when he is testing the prototype. In order to get the best results, we went through UI twice. The first iteration was a passive observation, in which we took notes. The second time we opted for a think aloud in which the user could explain why he made the choices he made.

By listening to his thought process we were able to get some really useful insights on what confused him and also what he thought was well designed and intuitive.

The tasks we asked our first user to perform were

- Find a location to study
- Record a study session
- Look at productivity history

Following is a step-by-step overview of the first iteration of the user going through our paper prototype while we were taking notes.

Step 1 - Login: No difficulties.

Step 2 - Home: Clicks on search in menu.

Step 3 - Search: Immediately types zip code and then presses magnifying glass on left of zip code. Not aware about the large button in the middle.

Step 4 - Map: Clicks on number on map to choose location. After that fails clicks on icon in the list.

Step 5 - IVE band: After explaining the functions of the band it is clear to him. Confusion about the red LED.

Step 6 - Feedback: Smooth interaction.

Step 7 - Home: Clicks on history.

Step 8 - History: Initially not sure where to click but then immediately after realizes it's a list. Wonders if possible to delete a session from history.




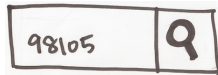

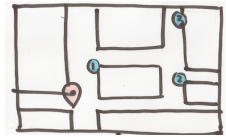
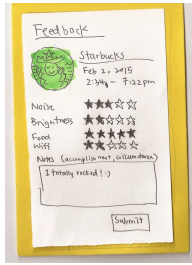
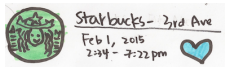
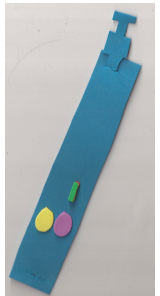
Step 9 - Specific session: Smooth interaction.

Step 10 - Home: Clicks on settings, but not sure what it's for.

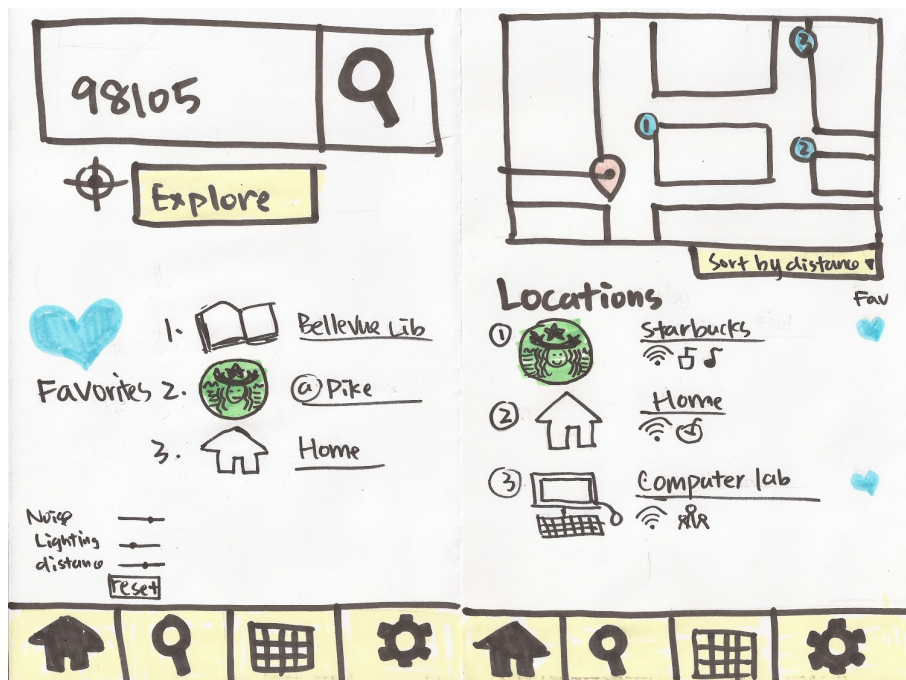
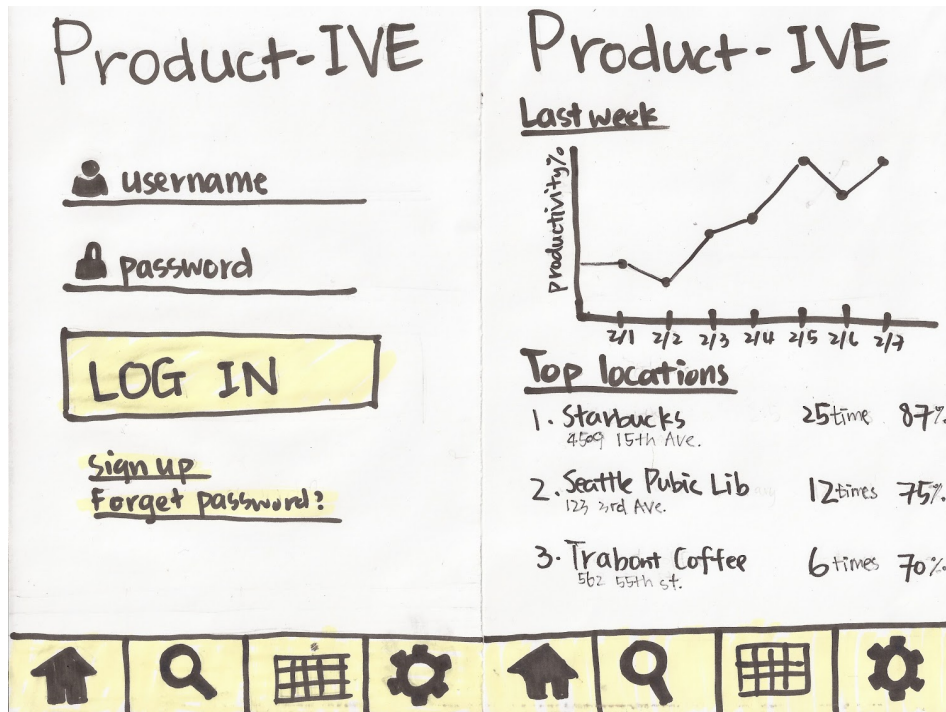
Step 11 - Settings: Adjusts settings and goes back to home.

Next are some of the comments and feedback that came up during the second iteration of the user going through our paper prototype while thinking aloud.

The overall interaction was pretty smooth, with the thing that confused him the most being the button on the search page. He would have liked to see a way to add a favorite location since they are listed in the search page. He was unclear about how frequently you would need to change your settings and if there should be a suggested button for that when searching. He tends to like websites that have the walk-through option for first time users but has never seen it in an app so he thought we could potentially bring the user to the settings page when they enter the app for the first time.

Image	Issue	Severity (1-4)	Change	Fixed image
	<p>Search button is unclear</p> <p>Heuristic: Consistency and standards</p>	3	Change the button to something more familiar to the user that suggests pressing affordance	
	<p>Pressed magnifying glass to the left of zip code to search</p> <p>Heuristic: Aesthetic and minimalist design</p>	3	Add it as a more user friendly button	
	<p>Pressed numbers on the map instead of list</p> <p>Heuristic: Consistency and standards</p>	2	Make number on map and list both pressable and same have same functionality	
	<p>No way to favorite a location even though app shows favorites</p> <p>Heuristic: Consistency and standards</p>	1	Add favorite button in the feedback page	
	<p>Unclear about red LED's function on the band.</p> <p>Heuristic: Consistency and standards</p>	1	Change red to mean not currently in a session instead of 'disconnected'	No update image since band stays the same

Second paper prototype



# History

Date	Location
2/6	Paul Allen Lib
2/1	Starbucks - 3rd Ave
1/30	CSE 002
1/24	Home
1/15	Office

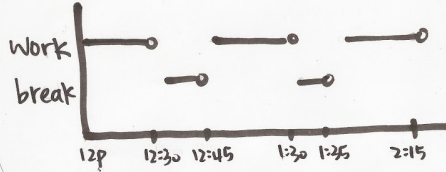
Show more

+ Add missing session



# Detailed history

Feb 6, 2015  
@Paul Allen Library  
2060 15th Ave, Seattle 98108



noise 1 125dB

lighting 1 10

coffee ☹️ 😊

Notes

Bad coffee :c



# Settings

noise 1 125dB

lighting 1 10

distance 1 25 mi

wifi  Yes  No

food  Yes  No

IVE band connected

Break alert

freq Every 1 hr

length 15 mins



# Feedback



Starbucks - 3rd Ave

Feb 1, 2015  
2:34 - 7:22 pm

Noise

Lighting

Coffee

Wifi

Notes (atmosphere, experiences)

Finished more than expected!

Submit